

# Notice of Allowability

Application No.

09/686,601

Examiner

Samuel Broda

Applicant(s)

BUTTOLO ET AL.

Art Unit

2123

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicants' Amendment mailed on 1 July 2004.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☐ The drawings filed on \_\_\_\_\_ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All   b) ☐ Some\*   c) ☐ None   of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☒ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_



**SAMUEL BRODA, ESQ.**  
**PRIMARY EXAMINER**

Art Unit: 2123

1. This communication is in response to Applicants' Amendment mailed on 1 July 2004. Claims 1, 8-9, 13-14, and 18-19 were amended; claims 1-20 are pending.

***Drawings***

2. Applicants' corrected Fig. 3A of the drawings is approved and a new set of formal drawings containing the corrections is required.

***Withdrawal of Rejections Under Sections 102, 103, and 112***

3. Applicants' arguments and claim amendments are sufficient to remove the objections and claim rejections under Sections 101, 102-103, and 112.

***Examiner's Amendment***

4.1 An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

This Examiner's amendment corrects two typographical errors in the amended claims. Authorization for this Examiner's amendment was given in a telephone conversation with Mr. Daniel Bliss, Reg. No. 32,398, on 22 November 2004.

- 4.2 The application has been amended as follows:

Art Unit: 2123

In Claim 9, line 24, change:

“geometric model”

to:

--mesh model--.

In Claim 19, line 2, change:

“tracking”

to:

--tracking point--.

### ***Reasons for Allowance***

5. The following is an Examiner’s statement of reasons for the indication of allowable subject matter:

The closest prior art of record shows:

- (1) a method of real time collision detection between geometric models (Basdogan et al, U.S. Patent 6,704,694);
- (2) a method for haptically deforming a virtual surface (Tarr, U.S. Patent 6,191,796); and
- (3) a triangular mesh and ‘focus’ method having application in robotic arm modeling (De Floriani et al, “On-line Space Sculpturing for 3D Shape Manipulation”).

5.1 Applicants’ first set of claims consists of claims 1-8.

Art Unit: 2123

Independent claim 1 is directed to a method of real time collision detection between geometric models. This claim identifies the distinct steps of: “using the state of the new tracking point to determine if a predetermined condition is met to conclude that the new tracking point is on the current triangle or if another predetermined condition is met to conclude that the new tracking point crossed to a new triangle, wherein the new triangle is connectively associated with the current triangle,” “determining a contact force between the first geometric model and the second geometric model,” and “concluding a collision between the first geometric model and the second geometric model if the contact force is greater than zero.”

Because the closest prior art does not appear to teach or suggest the combination of determining location of a new tracking point along with a contact force and whether two models collide, claims 1-8 are deemed allowable.

## 5.2 Applicants' second set of claims consists of claims 9-13.

Independent claim 9 is directed to a method of real time collision detection with a geometric model of a vehicle. This claim identifies the distinct steps of: “using the state of the new tracking point to determine if a predetermined condition is met concluding the new tracking point is on the current triangle or if another predetermined condition is met to concluding the new tracking point is crossing over to a new triangle, wherein the new triangle is connectively associated with the current triangle,” “determining a contact force between the new tracking point and the mesh model,” and “concluding a collision between the object and the mesh model if the contact force is greater than zero.”

Art Unit: 2123

Because the closest prior art does not appear to teach or suggest the combination of determining location of a new tracking point along with a contact force and whether an object and a mesh model collide, claims 9-13 are deemed allowable.

**5.3** Applicants' third set of claims consists of claims 14-20.

Independent claim 14 is directed to a method of real time collision detection and force feedback with a geometric model of a vehicle. This claim identifies the distinct steps of: "using the state of the new tracking point to determine if a predetermined condition is met concluding the new tracking point is on the current triangle or if another predetermined condition is met to concluding the new tracking point is crossing over to a new triangle, wherein the new triangle is connectively associated with the current triangle," "determining a contact force between the new tracking point and the mesh model by calculating a contact force of the new tracking point," and "concluding a collision if the contact force is greater than zero."

Because the closest prior art does not appear to teach or suggest the combination of determining location of a new tracking point along with a contact force and whether a rigid object and a mesh model collide, claims 14-20 are deemed allowable.

6. Any comments considered necessary by Applicants must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 2123

7. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Samuel Broda, whose telephone number is (571) 272-3709. The Examiner can normally be reached on Mondays through Fridays from 8:00 AM – 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska can be reached at (571) 272-3716. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (571) 272-2100.



**SAMUEL BRODA, ESQ.  
PRIMARY EXAMINER**